DOCUMENT RESUME

ED 327 210 IR 053 392

AUTHOR	Balle, Francis
TITLE	The Information Society, Schools, and the Media.
INSTITUTION	Council of Europe, Strasbourg (France).
REPORT NO	MED-16-4
PUB DATE	89
NOTE	28p.; Report presented at a Session of the Standing Conference of European Ministers of Education (16th, Istanbul, Turkey, October 11-12, 1989). For related papers, see IR 053 389-393.
PUB TYPE	Reports - Descriptive (141) -- Speeches/Conference Papers (150)
EDRS PRICE	MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS	*Computer Literacy; Educational Strategies; Educational Technology; Educational Television; *Education Work Relationship; Elementary Secondary Education; Employment Opportunities; *Employment Qualifications; Equal Education; Foreign Countries; Higher Education; *Information Technology; *Media Research; Science and Society
IDENTIFIERS	Information Economy; Information Society; *New Information and Communication Technologies

ABSTRACT

This report begins by examining the transition from the industrial society to the informatics society which began in the 1960s, when the newspaper's monopoly on information was destroyed by radio and television, followed by the development of an information-based economy. The salient features of the new area are identified as: (1) the ever increasing quantity and diversity of available media; (2) wider personal and selective access to networks, programs, and services; and (3) the abolition of frontiers between many media. The realities and illusions of the information society are then discussed in the context of the paradox presented by the new media, which, at the very moment that they seem to be triumphing over certain forms of servitude, open the way to unexpected hazards. Arguing that the true problem lies in the need for mastery and intelligent use of the media, it is concluded that communication technology invites people to rediscover the importance of intellectual disciplines with the help of general education. As communication technology establishes new relationships between the world of school and the corporate world, it brings the school as a training ground face to face with its responsibilities. Competition and conflict between the media and the school from 1950 to 1980 are reviewed, and reasons for growth in their collaboration beginning in 1979-80 are examined. Ways to develop the most productive and harmonious relationship between education and the media are suggested in the concluding chapter. (MAB)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED327210

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
☐ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

COUNCIL OF EUROPE ★ ★ ★ ★ ★ CONSEIL DE L'EUROPE

M ED-16-4

Standing Conference of European Ministers of Education

Sixteenth Session, Istanbul, 11-12 October 1989

The information society, schools and the media

Report by Professor Francis Balle
University of Paris (France)

IR053392

Forty years
Council of Europe

Strasbourg 1989

"PERMISSION TO REPRODUCE THIS MATERIAL IN MICROFICHE ONLY HAS BEEN GRANTED BY

N.Borch-Jacobsen

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

STANDING CONFERENCE

OF EUROPEAN MINISTERS OF EDUCATION

Secretariat : Council of Europe

Sixteenth Session

Istanbul, 11-12 October 1989

THE INFORMATION SOCIETY, SCHOOLS AND THE MEDIA

R E P O R T

by

Professor Francis BALLE

University of Paris

(France)

MED-16-4

21.719
04.4

CONTENTS

		Page
SUMMARY		1
I.	THE POST-INDUSTRIAL SOCIETY FINALLY IDENTIFIED	4
A.	The shock of the 1960s	4
B.	Information at the heart of our societies	5
	a. An information-based economy	5
	b. The transition from the industrial society to the informatics society	6
	c. The computer and knowledge	7
C.	A different attitude to communication technology	8
II.	THE REALITIES AND ILLUSIONS OF THE INFORMATION SOCIETY	11
III.	THE MEDIA AND THE SCHOOL: DIVISION OF LABOUR OR COMPETITION?	14
A.	The age of suspicion	14
B.	The reasons for a move towards co-operation since 1980	17
	a. Use of the media by schools from 1950 to 1980	17
	b. Reasons for the change	18
C.	Information games and what is at stake	18
	a. Information is not the key to democracy	18
	b. Communication machines are not a panacea	19
D.	The school challenged by the telematics society	20
	a. The role of telematic distributing service	20
IV.	CONCLUSION	23

SUMMARY

Chapter 1 - Post-Industrial Society Finally Identified

The 1960's saw the newspapers age-old monopoly of information destroyed by radio and television. There has since been a growing diversity of types of media expression and interaction between them, whereas for a long time the media has been relatively independent of each other. This symbolised the transition from an industrial society to an "informatics" or information processing society. The determining factor has been the creation, processing and transmitting of information, which is now central to the activity of modern societies. As a result, the number of information-related jobs has grown rapidly, while the number of industrial jobs created has decreased. Thus, the cultural and social as well as the economic environments have been altered.

The salient features of the new era are (i) the ever increasing and diversity of available media; (ii) wider personal and selective access to networks, prorammes and services; and (iii) the abolition of frontiers between many media.

For the individual, this has meant emanicipation from previous limits to communication and from the constraints of time and space. Yet despite advances in new information and communication technologies (NICT), educational systems are inadequate and often poorly adapted to the new developments, and the result is under-educated and unprepared citizens. Knowledge of NICT is becoming essential and computer illiteracy will place people in a position of inferiority. Already, large companies have spent an enormous amount of money retraining their employees in information technology.

Chapter 2 - Realities and Illusions of the Information Society

Communication in all its forms is considered the new panacea. But is it truly a new frontier or merely a misguided illusion? The paradox of the media is that they enslave at the same time as they liberate. While the media help overcome the limitations imposed by distance, they also refer individuals back to themselves, to the limits of a just-conquered freedom, which may turn out to be illusory because of lack of imagination, lack of time or money, or lack of ability to maintain personal contact.

Communication has now become the privileged vantage point from which society questions itself about such ideas as how technology influences social order, how training matches employment, etc. Economically it is a constantly shifting but growing sector which requires adaptability. It challenges education by inviting people to rediscover the importance of intelligent disciplines and requiring new relations between the world of school and the world of work.

Selective interactive telecommunications will now tend to progress faster than uni-directional broadcasting (like television) since they allow for more freedom of choice and less imposition. The abundance of the media in general and the development of interactivity will allow people to choose the programmes or services they want, rather than suffering the messages chosen for them by publishers or broadcasters.

Chapter 3 - The Media and the School: Division of Labour or Competition?

What conclusions can be drawn from a brief overview of the attempts from 1950 to 1980 to use radio and television for educational purposes? On the negative side, it may be said that the use of television in schools has failed to fulfil its promise, a trend that led many to abandon the experiment. On the positive side, there have been some benefits, though not those that were expected. As a result, the experiment has been continued, but in a quite different direction than before.

These results may be attributed to either excessive optimisim or excessive pessimism. On the negative side, schools viewed television or radio as mere tools without integrating them enough into the classroom or making productive use of their potential. Instead, lessons were merely given in front of a camera or a microphone. Schools did not learn to make use of the intrinsic capacities of media resources and made no effort to adapt teaching to include them. On the optimistic side, some expected the media to compensate for all the weaknesses and shortcomings of the schools. In essence, some wanted the television to become the school.

The conflict between schools and the media resulted from the fact that both were suffering from delusions of grandeur and sought exclusive control over thought and culture. Each mistakenly believed that one day it would be able to monopolise the education of children. Today, the two recognise their dependence on each other. The media arouse curiosity about matters which can often be comprehended only by means of the tools provided by schools.

The growth of collaboration between schools and the media may be attributed both to the impact of new technology beginning in 1979-80 and to less ambitious goals on both sides. The advent of new technology has had three main results: (i) a record rate of media growth since 1980; (ii) a realm of communications that has been extended to range from the most detailed and microscopic to the most general and large-scale; and (iii) improved individual and selective access to all kinds of information and communication.

In addition, both the schools and the media have set their sights lower in relation to each other. No longer is television seen as the source of all power and prestige - the answer to everything - that should take over schools. For their part, schools have discovered that they do not have an educational monopoly over children. The stage has now been reached when each may be able to concentrate on what it does best on fulfilling its appropriate role.

Professor Balle goes on to dispel two myths: first, that more information means more democracy, whereas information is only of value to those who have learned to use it and constitutes power only for those who, having understood or interpreted it, have the means to take advantage of it. Second, that universal communication heralds universal brotherhood and the reconciliation of mankind, whereas in fact communication is the expression of a will to be or live together. It is the community which precedes communication and not the reverse, even if communication may eventually reinforce the community.

Professor Balle believes that the education system will have difficulty in responding to the demand for increasing numbers with ever higher qualifications and for a form of teaching that matches the needs of life-long learning - at once personalised and on a massive scale. The new technologies may provide an answer in the form of remote teaching systems, telematics services etc. which allow individual and selective access to knowledge. Once more, knowledge must benefit from co-operation between education and NICT.

Chapter 4 - Conclusion : The New Relationship Between Schools and the Media

The real issue today is how to develop the most productive and harmonious relationship between education and the media. The future lies in the stocking and supply of select audio-visual products to be used in a local educational context. Informatics will give access to a multiplicity of sources of culture and education. The school's role will be not so much rearranging the flow of images as commenting on values. Undoubtedly, education will be radically transformed with regard to curriculum, methods and aims, a challenge which should be seized.

I. THE POST-INDUSTRIAL SOCIETY FINALLY IDENTIFIED

A. The shock of the 1960s

Although 1960 was a key date in the information world, the shock it brought was not understood for what it was. 1960 meant first and foremost the end of the monopoly of the daily paper, which lost its role as exclusive master over information. Radio and television came into their own. At the same time, the press began to gear down. Diversification of formulas and a broader range of tones and ambitions gave rise to mutual borrowing and influence between genres which had long been alien to one another. But the change did not stop there. Indeed, much more was needed before the reign of the media could take hold. The decisive factor was the role of mediator which journalists finally assumed, spontaneously or deliberately, between their readers on the one hand and, on the other, the actors or authors of current events, or the established representatives of arts and sciences. In a word, journalists had to succeed in embodying statutorily the words addressed by society to itself about itself and, to that end, a thorough shake-out of the roles of the three media - written press, radio and television - and their distribution was required.

By virtue of their vast and unnumbered readership, the first born of the "mass media", the great dailies, gave the journalist an unprecedented social status. The information journals, dailies first followed by weeklies - the former almost always eclectic and the latter still only rarely specialised - gradually extended their empire over new social classes in search of standardised entertainment and distinctive signs of the Zeitgeist (the press began to divide itself into a press of exchanges, a group-specific press, an élite press, a women's press, a children's and adolescents' press, a single-theme press, an escapist press, a militants' press, etc). Marketing specialists everywhere were guided by the same principle, namely that the search for "pure targets" was the price the press now had to pay for its continued growth. Their good fortune was further boosted by the fact that progress in printing techniques favoured the application of their recipes: micro-publishing allowed the publication at low cost of papers with editions of only a few thousand.

Until the sixties, the roles of radio, television and the press were clearly demarcated. The advent of radio in the 1920s and that of television between 1945 and 1955 scarcely encroached on the predominance of the dailies. The co-existence of the three media was based much more on division of labour than on competition. The preserve of the press was information, while radio "specialised" in music and variety and television opted for feature films. Only in the field of information did the distribution of roles always remain true to the maxim that radio announces the event, television shows it and the press explains it. Under this arrangement, the press obviously came off best.

In 1960 came the upheaval. In the United States, the first sign appeared with the victory of John Kennedy over Richard Nixon in the presidential election. All the political analysts of the time attributed this victory to John Kennedy's superior performance on television. In 1961, at the time of the closing events of the Algerian war, it was France's turn to discover the formidable power of the radio. The appeals launched by General de Gaulle to soldiers in the Algerian djebels with their transistor radios rapidly took on an emotional and political force with which no written account could have competed. Only then did journalists and newspaper readers fully comprehend the merits of the transistor radio and the capacities of television: thenceforth, news feature programmes on radio and television proliferated, successfully complementing the necessarily superficial information in the newspapers and thus enabling the new media to compete with the major dailies.

B. Information at the heart of our societies

a. An information-based economy

This media explosion-implosion is not an isolated phenomenon. In truth, it is to be seen as the symbol of a change in society's identity: the transition from an industrial society to what we call "the informatics society" today.

The emergence of this new type of society dates back to the years 1956-57, and the first place to be affected by it was the United States.

In 1956, for the first time in the history of an industrialised country, the number of white-collar workers - technicians, managers, civil servants, office workers - exceeded that of so-called blue-collar workers. For the first time, industrial America was giving way to a new society in which a majority of Americans was no longer employed in the production of consumer goods and equipment but in the production of information.

The following year - 1957 - marked the beginning of a total information revolution: the launch of Sputnik by the Soviets in early October was the technological catalyst which a society increasingly dependent on information had been waiting for. For the real and poorly understood importance of Sputnik was not that it was the start of the conquest of space, but that it ushered in the era of global communication via satellite. It is plain that the transformation of the earth by satellites into what Marshall McLuhan called "a global village" was not immediately perceived. Contrary to what is sometimes still believed, the major effect of the satellite era has been not so much the opening up of space but the focusing of earth upon itself.

It is always difficult to grasp and define that which is in the process of happening. The most far-sighted thinkers of the age are no exceptions. The first to dub this new age the post industrial society was Daniel Bell, a sociologist at the University of Harvard. A close analysis of this post industrial society clearly demonstrates that it is nothing less than the "informatics" society. The criteria always adopted to describe the structures of a society - the number of employees absorbed by the various sectors of the economy - is perfectly operative here: the number of information-related jobs has grown continuously. Whereas in 1950, only 17% of Americans performed activities directly connected with information, this percentage now stands at over 60%. In a study commissioned by the American Department of Commerce, an information expert, Dr. Marc Porat,

classified all occupational activities and parts of activities in the information sector, in the industrial production sector and in all other sectors. He inventoried 440 occupations distributed over 201 industrial enterprises. He proceeded by identifying from among these occupations those directly related to information, in order to work out what proportion of the GNP they accounted for. To clear the ground, he began by drawing up a list of unequivocally information-linked occupations. This enabled him to isolate a first occupational category, which he called the primary information sector. The sector whose job is to produce and distribute information equipment or supply specific information services to the community encompasses activities as diverse as the manufacture of telecommunications equipment and computers, printing, the mass media, advertising, accounting, teaching, management, certain financial activities and insurance. In 1967, 25.1% of the American GNP came from this primary information sector. The economic contribution of people employed to supply information to the companies they work for (what Marc Porat calls the secondary information sector) stood at 21.1% of GNP. According to a more recent study by David Birch, these sectors' share of economic activity has been growing continuously: this study has shown that of some 20 million jobs created between 1970 and 1980, only 5% were industrial jobs and almost 90% related to information, the transmission of knowledge or the services sector.

Today, almost all specialised occupations call upon the services of people linked to information in one way or another: lawyers, teachers, engineers, programmers, systems analysts, doctors, architects, librarians, journalists, etc. True, in a way, an industrial worker, for instance a fitter or machine operator, is supposed to be perfectly informed about the task he is performing, but what distinguishes occupations adapted to the informatics or information-processing society from the others is that the object is no longer simply to assimilate information but essentially to create and transmit it. Today, it is clear that the main strategic resource is the acquisition and distribution of knowledge. Nowadays, we mass-produce information as we began to mass-produce cars only yesterday. The financial capital held by a number of individuals is no longer the determining strategic element in the successful creation or management of an enterprise. That element is knowledge and, if possible, knowledge held by all. Noyce, co-founder in 1968 of Intel Corporation, a company which enjoys a strong reputation on the market today, made statements in this connection which leave no room for doubt: unlike the steel industry, the automobile industry and others, he explained, the semi-conductor industry had never been an oligopoly. On the contrary, it was an industry which was able to make more intense use of grey matter resources than of financial capital.

b. The transition from the industrial society to the informatics society

Thus it is clear that the transition from an industrial society to an informatics or information-processing society could not take place on the economic level only. This change in the kinds of jobs held by the majority of the population of the so-called industrialised countries has plainly meant a change in both human relations as a whole and the "Weltanschaung" adopted by this society. During the agricultural period, what counted was the interaction between man and nature. In the industrial society, man is doing battle with a nature which is already tamed. In our informatics society, it is in exchanges between people that the vital stakes are played for. This is reflected by a geometric progression in person-to-person transactions: direct interpersonal communications, telephone calls, signing of cheques, etc.

The most characteristic and determining feature of the informatics society was no doubt the speed with which it altered our cultural environment and our habits of mind. Indeed, the pace of change will go on gathering speed while communication technology keeps on cutting down the time it takes to transmit information. For a letter sent by post to reach its addressee takes two days; today, if an electronic transmission procedure is used, the letter reaches him in several seconds. To give another example, the day a shot was fired at President Lincoln, the news reached the four corners of the United States mainly by telegraph. But as the country was not yet linked up with England, it took five days for word of the event to reach London. The extent to which times have changed is evident from the fact that the day a shot was fired at President Reagan, a correspondent of the London "Spectator" typing a story just a stone's throw from the scene of the incident heard the news by telephone from his editor "back" in Britain, who had just seen images of the assassination attempt, televised immediately after the event.

The creation, processing and transportation of information are at the very heart of modern society. Out of the combination of technologies such as telephone, computer and television, an information and communications system has come into being which is capable of transmitting data and allowing instantaneous interactions between the human being and the computer. Moreover, for the first time in the history of society, the economy is based on a key resource which is not only renewable by man at will but capable of generating itself, to the point where we are in danger of being submerged. Almost 10,000 scientific articles are published every day. Scientific and technological information is growing at a rate of 13% a year; in other words, it is doubling in volume every five and a half years. This increase should reach 40% a year with the appearance of new, more powerful computer systems and a growing scientific population. It is forecast that in the year 2000, an individual information-processing system (computer, printer, console screen, modem, etc) will cost approximately double the current price of a radiotelephone system connected to a video recorder.

The change which will revolutionise office work will affect the place of work even more than the nature of it. Thanks to terminals and word processors linked up to an office several kilometres away, tomorrow's secretaries will almost everywhere choose to work at home. And not only secretaries, but all those whose job is to generate, prepare and distribute information, for instance in industry, banking or insurance.

c. The computer and knowledge

The problem is this: we are undoubtedly buried in information but we are terribly lacking in knowledge. In the United States, the verdict is damning. The Carnegie Council of Policy Studies recently stated that, given the inadequacy of (...) public education, approximately a third of young people were under-educated, under-employed, under-adapted and therefore incapable of making their way in American society. It is, alas, not hard to imagine where lack of basic knowledge and ignorance of information-processing techniques is in danger of leading us. In the informatics society, to be without this knowledge would be tantamount to trying to pinpoint a book in a heap piled at random, or in the collections of the Library of Congress without the use of a catalogue, a list or an index ... or even the help of a librarian. In other words, anyone who does not know how to use a computer will immediately be placed in a position of inferiority.

Whether or not we use a computer in our jobs, the main thing is to become familiar with and acquire a knowledge of computing, as this new technology is bound to flood the entire world of work. A further, already foreseeable consequence of the rapid change which is emerging is that no one will be able to pursue the same occupation all his working life, even if that occupation is directly related to informatics. The change in the offing will force us constantly to renew our skills. Already today, major private enterprises devote huge sums every year to retraining and training of their staff.

On all sides then, the computer is invading our lives, changing our human relations and our relationship with the world. One day, no doubt, Steven P Jobs, co-founder of Apple Computers, will be proved right in his assertion that we have to help create a fashion so that everyone will want a computer of his own. This may seem ambitious, but we should not overlook the lesson of the past: when cars were first built, people bought them for pleasure. Today, entirely different considerations lead us to acquire one: reasonable fuel consumption and ease of transport. Nowadays, we buy personal computers for pleasure. Cars have become indispensable because half a century ago we "decided" that our economy was to be based on the automobile. Everything indicates that the computer will follow the same progression: from an object acquired to satisfy man's desire for technological novelty, it will become a fundamental need of the citizen, something he cannot imagine doing without unless there is a radical change of civilisation.

C. A different attitude to communication technology

The possibility of picturing together the subjects and objects of each communication allows us to consider present realities differently, as the absolute influence of the obsessions and prejudices of the moment - both in the commerce of ideas in general and in news coverage in particular - is eroded. The range of possible modes of communication also leads to a clearer apprehension of the media thanks to the distinction, for a given society, between the potential of the available technology and the use people decide to make of it.

Furthermore, a diagnosis of the communications system, its institutions and the activities over which they preside, confers the right to judge the social order itself. Not only does it allow a better evaluation of the use made of technological capabilities and a clearer view of the way in which institutions live up to their promises and the trust placed in them; above all, it enables a society to consider the opportunities offered it and the concomitant dangers which threaten it from the point of view of personal and political freedom.

The interactionist mode of thought as applied to the world of communications justifies a preliminary question: what possibilities do technologies taken as a whole provide for each of us, whether we wish to express our thoughts or gain access to the expression of the thoughts of others? The salient feature of recent developments is, at least in the wealthiest democracies, undoubtedly the ever-increasing abundance of available media. Every year, they grow more numerous and more varied. The book and the newspaper have long ceased to be the only "autonomous" media: with the videogram, the video recorder and the video disk reader, animated images with sound are now as accessible to everyone as are printed documents.

Thanks to cables and satellites, means of broadcasting in the strict sense, from the transmitter to a multitude of receivers, are now being thrust towards two infinities - the smallest communities on the one hand and the entire planet on the other - along the path opened up by Marconi in 1896. The result is narrowcasting at one extreme and broadcasting at the other. The media no longer transmit only sound but also images, graphics, texts or data. Diversification and proliferation of techniques is also happening in the world of two-way communications, inaugurated by Graham Bell's telephone in 1876. Thanks to the unexpected marriage of telephone, television and computer, we now have not only the possibility of a long distance conversation between two people, but also of the exchange between several people, thousands of kilometres apart, of all kinds of texts or images, fixed or animated, with or without sound - a form of exchange hardly imaginable on that scale at the start of the '80s.

The second salient feature, striking even by its technical potentialities alone, is individual access to networks on request. Until recently, users of programmes or services transmitted by networks were prisoners of the pattern set up by broadcasters: only messages imprinted on autonomous or "off-line" data carriers such as books, disks or video cassettes, were permanently available. Now, existing equipment enables everyone to have access by mere request and whenever he wishes to all kinds of services transmitted via Hertzian waves or cables thanks to the existence of networks and possibly their links with satellites. Thus, videography in both its versions, broadcast teletext or interactive videotex, is constantly accessible to everyone, just like newspaper or prerecorded cassette.

Thirdly, progress in communication technologies long separate from one another is marked by their gradual convergence. Each medium - press, telecommunications and cinema, radio and television and finally teleinformatics with its cluster of services - was, from its birth, a particular universe with its own equipment and professionals, its own arrangements and assignments. In an initial phase, the mere fact of bringing one technology closer to another brought about relative improvements. For instance, 1944 saw the convergence of radio and the tape recorder, 1952, that of television and the video recorder, 1964 that of television and the satellite and 1978 that of the video disk with informatics. Sometimes, it was the association of two different technologies that gave rise to a new medium: the telephone and informatics gave rise to teleinformatics in 1964; Hertzian broadcasting and the computer to the Antiope teletext system in 1979; finally, informatics and telecommunications to interactive videotex in 1984. Henceforth, simultaneous developments in informatics and telecommunications enable us to envisage the transmission of all signals in digitalised form by a single network with one- or two-way transmission. The "réseau numérique avec intégration de services" (RNIS, digital network with integrated services) already gives an intimation of this future network, free of the barriers which still exist today between broadcasting, cablecasting and telecommunications or, in other words, between Hertzian broadcasting, cable radio and television and physical and non-physical telephone channels.

The proliferation of equipment, new access-on-demand devices and the removal of barriers between some media: what could this threefold technological development mean for the individual? In other words, what are its most foreseeable implications for each of the representatives of the society experiencing it? On the conditions of his exchanges with others and the meaning he assigns to them? On his perception of his place in the various social universes in which he finds himself, of his own free will or of necessity?

In an initial phase, the development of communication technologies is interpreted by everyone as a **twofold emancipation**: on the one hand, emancipation from the limited nature of exchanges with his fellows, and on the other, emancipation from the multiple servitudes of distance in time and space.

Emancipation, first of all, with regard to limitations. The abundance of opinions, information and works put into circulation and pooled by the media has become at once a reality and an ideal. Thanks to technology, men "communicate" with one another more and more. And every day, the number of those who consider this possibility of communicating to be the greatest privilege of their age grows a little larger. It is impossible to separate "communication" as recreation and as the expression of a desire, an opportunity which it would be not only a pity but also a sin to forego: the sine qua non of all progress, including that of freedom for all and for each individual.

Emancipation, next, from another constraint: that of distance. Thanks to recording techniques, time and space are becoming less and less of an obstacle to the exchange of ideas, "communication" between people via the multiple expressions of their thought. Thus, the media provide a possibility of disproving ever more easily and more effectively the once adamantine law that men's interest in things, people or events is directly proportional to their nearness to home. Thanks to the wonders of technology, the number of transactions between human beings no longer varies in inverse proportion to the distance between them. Indifferent to the constraints of distance, telecommunication today, easy and efficient, more varied and less expensive than ever, not only allows a remote presence; it also becomes an instrument of remote action through "interactive" services such as teleshopping or remote booking.

This plethora and multiplicity of new media has at least one major consequence from the point of view of the citizen's relationship with the media: an increase in individual and selective access to all kinds of programmes and services. Domestic video equipment - video recorders, video cameras, compact disks, VCDs and ICDs (video-compact disks and interactive compact disks) - which have recently appeared, provide for the image, animated and accompanied by sound, all the access, recording and processing facilities which were long the prerogative of sound after centuries of being associated exclusively with a text.

While these new autonomous media have been spreading among the public, equipment has been in place for several years now which enables everyone to gain access on request and when he wishes to all kinds of services, be they audiovisual programmes or information or training services, interactive or otherwise. Linked to transmission networks, this equipment provides the same possibilities of individual and selective access as does a newspaper or a prerecorded cassette.

It is to the cluster of services accessible on request that we refer when we speak of "teleinformatics" (remote data-processing) and "videocommunications". Teleinformatics is the range of information or training services in the form of texts or graphics, produced by links set up between computers and means of transmission. "Telematics" (télématique), a word coined by Alain Minc and Simon Nora in 1978, is only one part of teleinformatics: that which concerns uses for private individuals rather than organisations. "Videocommunications" refers to the entire cluster of services or audiovisual programmes accessible on request as a result of links set up between the resources of broadcasting and those of telecommunications.

Society as a whole can thus benefit from selective and individual access to information, something which only recently was the prerogative of large companies.

II. THE REALITIES AND ILLUSIONS OF THE INFORMATION SOCIETY

Communication, in all its forms, is therefore the new panacea. But should we necessarily welcome its long-awaited reign, now it has finally dawned? A panacea for some, for others communication is merely a slogan. There are two types of fears. Firstly, that communication, with the possibilities provided by the new media to communicate "within one's own four walls", might create a society of monadic, compartmentalised individuals who would end up losing contact with their fellows. In other words, is not the freedom created by the new media in danger of turning into the very opposite?

Secondly, as they cause their forerunners to gear down, will the new media create new jobs tomorrow or, as with other economic activities, lead to the elimination of certain jobs difficult to make up for by the emergence of new occupations?

Technology is ambivalent: it enslaves and emancipates at the same time. At the very moment when the media seem to be triumphing over certain forms of servitude, they open the way to unexpected hazards, forcing the individual back on himself, to the outer limits of a joyously and almost rashly conquered freedom. Not because individual choices are sometimes illusory, the apparently different objects being, in reality, similar or equivalent, nor yet because these choices are not really free; but, more profoundly, because they are in danger of being constricted by lack of imagination still more than by lack of time or money. With whom does one "communicate" when one can communicate with the whole world? What should we look at when we can look at anything? What should we record and preserve when we can record everything? When communication techniques conceal behind their promises the inevitable limits, those of the force of circumstances or the human will, the freedom they offer is merely an illusion. Abundance then becomes a genuine form of poverty, wretched and tragic.

By a similar irony, the conquest of distance may mean a defeat for communication. Telecommunication as a whole is marked by ambivalence: it is at once liberating and oppressive. Since the first electric telegraph in 1937, the men of Prometheus's civilisation have been tirelessly seeking the realisation of an immemorial dream, that of ubiquity. Even before the rise of the new media, the history of the telephone and radio and television bear this out. Today, not only can words be transmitted over distances, but also images, statistical data and instructions. Telecommuting, for example, is put forward as

a convenience; its effectiveness is nevertheless inevitably restricted by the impossibility of personal exchanges, and the feeling it gives the individual of living in a kind of "info-bubble" appeals to some more than others. "Remote presence" comes up against the same limitations and harbours similar dangers: telephone and videophone do not merely provide a way of breaking the feeling of separation from another; they also constitute a convenient Ersatz, a way of escaping contact with others or a variously successful compensation for encounters people fear to seek lest they should fail or prove elusive.

Such is indeed the paradox of the media: they throw man back on himself, while at the same time opening up remote access to the words, actions or works of others. Telecommunications, easier and more varied than ever, has given birth to the utopia of universal acquaintance and communication of each with all. And the dream of a universal and liberating communication nurtures, in the same proportion, the obsession with useless knowledge and abortive exchanges with our fellows.

These reflections prompt a preliminary remark: if we consider both technical possibilities and the uses made of them, we realise that two-way telecommunications has brought about a spectacular advance in comparison to that heralded by one-way television broadcasting. In the breach opened up by telephone and computer, two-way data and image exchanges seem destined for a particularly glorious future thanks to videocommunications and teleinformatics. Progress of one-way broadcasting media, those which suggest comparison with a watering-can rose of varying diameter, for instance local cable-television networks or direct or semi-direct television broadcasting systems, is moving much more slowly. Hence the emphasis on exchanges rather than activities relating to "publication" proper. It is as if two-way communications were suddenly taking their revenge on vertical communications which came down from the heights of the social edifice, as if the new rise in communications in all its forms was the long-awaited compensatory response to the tyranny of the "mass-media", the privileged instruments of publication activities.

Moreover, some of the techniques which have developed in recent years - micro-publishing (publishing of books or newspapers with limited circulation), the possibilities for individuals to record sound or images, prerecorded videocassettes and video disks, remote information of numerous small groups - are based exclusively on a convergence of interests, concerns or freely selected objectives.

The price of growth for all media lies in diversification or specialisation, whether of the themes they deal with or the audiences they address. While making possible this development towards "micro-media", technology at the same time provides the individual with the possibility of selecting his group relations or social allegiances, his objective affiliations and his subjective references. Thus, associative exchange is gradually taking over from exchange between colleagues, the propagation of social causes from that of social identities. Of these identities, those imposed upon us are giving way to those we choose. This is not the too hastily proclaimed victory of specialised media over mass media, but the result of an abundance offered simultaneously by both: the possibility for each individual to choose a club in preference to a corporation, a voluntary association in preference to imposed collegiality, informal networks in preference to formal organisations.

Thus, the order of any media-rich society will henceforth follow this twofold trend, under the influence of the combined effects of technologies and the utopias they inspire: on the one hand, a preference for telecommunications rather than television broadcasting, on the other, the possibility more liberally offered to each individual to choose new social attachments, other than those imposed upon him. A twofold tendency, or rather additional possibilities given to people to express themselves or gain access to the words and works of others. Among media, the new does not replace the old, but rather opens up for it the way to a more brilliant career. The law in this case is that of all or nothing, plenitude or poverty, for everyone.

For societies which plump for plenitude, the question is therefore one of choosing the respective proportions the various communication activities are to take on. The image civilisation? Hegemony of television over mind? The main point lies elsewhere: it lies in the use made by each individual of the various available methods and modes of "communication". For a given social area, it lies in the way in which people's time and trust are apportioned between the various versions of exchange, propagation and publication.

Each communication activity has a significance of its own, and the value set upon it is more a function of morality than of sociology. Exchange, be it collegial or associative, always concerns interests or centres of interest common to its protagonists: in the first case, it asserts a collectivity which already exists; in the second it can, in particular cases, give rise to a collectivity before going on to reinforce the links between its members.
Propagation-related activities are different from exchange inasmuch as they are directed towards anonymous audiences whose contours are less well-defined. Their significance differs considerably depending on whether the source of the messages appears to its recipients as a personal mediator or a mere interface. Propagation of an identity institutionalises groups hitherto condemned to interpersonal relations only; it establishes them by transposing them from a latent to a patent state. Propagation of a cause is more an exercise in popularisation, conversion or persuasion, performed on a group which it also helps to institute.

Finally, publication activities have other virtues and other limits with regard to the collectivity and its constituent members. Its law is that of the addressees, who always have the last word. Hence the plurality of its ambitions: to inform, popularise, create. But hence also its perpetual temptation to give way to fashions and hobbyhorses on the basis of conceptions associated with the dominant trends of the moment.

We see then that overdevelopment of the media is not in itself a matter for fear. The new media superimpose themselves on the old without obliterating them, thereby providing new prospects without eliminating any. It is in the mastery and intelligence of their use that the true problem lies.

Neither El Dorado nor decoy, communication is, a few years short of the year 2000, the privileged platform from which society asks itself questions about itself, its present and its future - more exactly, about the way technologies are influencing the social order and, by the same token, about the way training matches up with employment, the way we learn to master today's sciences and the prospects for their future use. Communication today is not a sector of activity like any other: it is a shifting landscape in which jobs and training are invented on a day-to-day basis. And the unknown, as we know, gives rise to fears and anxiety. Let us speak plainly: we know that in future, activities other than communications will come to resemble more and more those which are generated by communications, requiring of the majority at once acquired skills and a considerable ability to adapt. There is therefore no reason why communication sectors should give rise to more fears than others.

True, the manifold jobs in communications borrow from the most demanding and universal intellectual disciplines: observation of facts, explanation of events, understanding of situations. No one can forecast what the tools and ambitions, the means and ends of communications will be tomorrow. In terms of employment, the audiovisual media and information services are probably more promising than is often thought. And communication in the service of institutions, in-house or directed towards the outside world, is doubtless still more so.

Because, more than other activities, it invites people to rediscover the importance of intellectual disciplines with the help of general education, and also because of the new relations it establishes between the world of school and the corporate world, communication brings the school as a training ground face to face with its responsibilities.

At what precise stage are these relations between the media and school today?

III. THE MEDIA AND THE SCHOOL: DIVISION OF LABOUR OR COMPETITION?

A. The age of suspicion

The age of communications is here and no one can fail to realise it. We are thus witnessing today the end of a misunderstanding which for years caused the media and the education system to take opposing sides. Each claimed for too long to have the monopoly of what Montaigne called "L'institution des enfants", that is to say not only their education but also their upbringing in the broadest sense of the word.

The largely free and open market has given journalism its seal of approval. There has therefore been a great temptation for a number of journalists to take themselves for teachers. "We journalists, wrote Jean Schwoehel, are the primary school teachers of the 20th century": to identify journalism with the teaching profession is as disastrous today as the identification of journalists with "publicists" or men of letters was in Balzac's day. The underlying cause of this identification in our age is a convergence between the way journalists and teachers describe their respective vocations. Their polemics go back to the challenge of the school by the media in the 1960s.

The advent of the popular press at the end of the 19th century did not impinge on the world of childhood. Newspapers therefore did not appear to jeopardise the family's influence, which had been exclusive for too long. For the same reasons, the emergence of radio in the 1920s also failed to cause anxiety among parents or the teaching profession. Television on the other hand was very quickly perceived as a challenge to their influence. To many people, the threat it represented was all the greater because it appeared to fill the vacuum suddenly left by the breakdown of the family structure. A German survey from 1954, referred to by Jean Cazeneuve (in La Société de l'ubiquité, p. 157), showed that two thirds of a very large sample of the population claimed to remain at home more often since acquiring a television set. Moreover, "the percentage of people giving this reply was particularly high among (...) those (...) with primary education and among blue collar workers". All these observations point in the same direction; none the less, no one of them provides a basis for determining the respective shares of parents and television in the "socialisation" of children. As W A Belson comments in "The impact of television", the introduction of television into a family very probably leads to a reduction in exchanges between the family members, but the time they spend together watching television is by no means a measure of the quality of their relations.

The media in general and television in particular can have a different effect on the family, by presenting a particular image of family life which reinforces to varying degrees the role of each family member. But the confrontation does not go very deep.

The rivalry between school and the media is becoming increasingly shriller and more emotional. The list of the education profession's grievances against the whole range of media is a long one. They are all drawn from traditional anti-media polemics. It is claimed that the media often give the illusion of knowledge: someone who reads the newspapers or who watches television a lot can easily and immediately acquire what Louis Porcher calls "un savoir en miettes" (piecemeal knowledge), knowlege which is not remotely in keeping with the canons of scientific rigour and learning. The culture served up by the media is like a harlequin coat, a patchwork culture made up of lots of little pieces, "a mosaic culture" to borrow Abraham Moles' expression, which, unlike learning in the academic sense, which generally progresses from the general to the particular, does the exact opposite. By the same token, the idea of the media as vehicles of a civilisation given over to mass production and mass consumption, confirming the victory of objects, has enjoyed much currency. Equally widespread is the idea that the media propagate a mass culture which is daily gaining ground on the culture we call "classical".

However, the point is less to list the grievances harboured by education against the media than to identify the reasons behind such a violent diatribe and this "excommunication" of the media to which the media are responding today by accusing schools of taking refuge in a ghetto and hiding from real life.

We find the answer clearly expressed in the words of a primary school teacher recorded by Claude Brémond in the course of a survey carried out among Catholic teachers in the state system in 1964, the words of the school master of a small village in Brittany:

> "It is not my job to bring instant gratification. I am the schoolmaster in my grey smock with my stick of chalk, I am still the "Third Republic" school master. How can I compete with the alluring, enticing and immediately satisfying properties of television?"

This apologia betrays perfectly the reasons for this indictment of the media: the school is defending its monopoly of culture; it is defending a realm which sees itself assailed by an enemy from without.

The school was not long able to ignore the gauntlet thrown down by television. Television, the flagship of the media, had infinitely more "firing power" than the family, the popular press and radio. School and television do not merely perceive each other as rivals in the transmission of culture. Both also stake a claim to possession of "true culture". The media are thus arraigned by the school on two counts: firstly as purveyors of culture and secondly as creators of a culture doomed to mediocrity, conformism and "Kitch". At the same time, the school is excommunicated by the media, in whose eyes it is to be blamed for remaining indifferent to the advent of the new culture born of their explosion.

Teachers have often answered the growing counter-offensive with their opponent's own weapons: under the pretext of cosmopolitanism or in order to follow their pupils' interests more closely, they have pleaded for the adoption in schools of the media's most tried and tested methods. At the same time, the media men have sometimes been tempted to liken their vocation to that of professional educators, perhaps impatient to supplant them once and for all or merely ambitious to inherit at last a long coveted prestige.

Indubitably, journalists and teachers can justly claim that they are subject to the same requirements: personal probity and intellectual rigour. However, the main point is elsewhere: it lies in the confusion, fostered by converging claims, between their respective tasks or vocations, and, more particularly, the confusion which has set in between information concerning topical debates or events and civic instruction addressed to future citizens. Why indeed should not the media fulfil the promises which sometimes seem to leave schools paralysed, promises of equality and emancipation in the face of the various and sometimes combined disadvantages of birth and ignorance?

In a democracy, journalism and education have two different vocations. To take one for the other is to forget that topical events do not occupy the same place in the world of school as in that of the information media: for schools, they are merely one possible illustration which may be used to provoke or exercise thought, whereas for the media, they are the necessary point of departure. The journalist begins with current events and moves towards what makes them intelligible, striving to overcome his readers' misapprehensions; the teacher introduces his pupils to intellectual disciplines, both of observation of facts and of formal analysis. Although they sometimes travel the same road, they do so in opposite directions: the media arouse curiosity about matters which can often be comprehended only by means of the tools provided by schools.

To perceive journalism and education as interchangable is also to forget that the popular media, press no less than radio and television, constitute a "parallel" school - a place of education after school or parallel to it - only to the extent that these purveyors of information respond to expectations, interests or curiosities which have already been aroused at school or elsewhere, in the course of other social exchanges, for instance within the family.

Surveys all point in the same direction: people watch on television and read in the papers what they have learnt to appreciate and understand elsewhere, by other means at some time in the past. This explains why the media, rather than working towards greater equality, reproduce and accentuate inequalities in relation to "culture". This is the reality behind the maxim that people get the papers or programmes they deserve.

B. The reasons for a move towards co-operation since 1980

Why has the question of school-media relations been formulated differently since the years 1978-80? Why have educational authorities and the men behind the media been giving the impression since the dawn of the eighties - not only on the old continent but also in the New World and Japan - of being confronted with the same challenges and the same difficulties, having to fight the same battle and therefore having to enter into more fruitful relations?

a. Use of the media by schools from 1950 to 1980

What conclusions can we draw from a very rapid purview of the attempts made by schools between 1950 and 1970 to use the resources of radio or television? To simplify a little, we may state that, at worst, the introduction of television into schools proved a failure. It did not achieve its self-appointed goals. Television's foray into schools was accordingly dubbed a failure, and in most cases, the experiment was abandoned.

At best, the use of the media by schools did produce some results assessed as positive, but they were not at all those which were expected. The experiment was therefore pursued nevertheless, but in a totally different direction from the one envisaged at the outset. Whether we take the Italian Tele Scuola, operative between 1958 and 1972, Tele-Niger which ran from 1964 to 1971, the experiment conducted under the Kennedy administration between 1964 and 1973 and directed towards American Samoa, or school television in France, the result was, invariably something of a fiasco.

The reasons for these failures are not hard to find. Firstly, schools used television and radio as a mere medium, a mere instrument, denying it the right to teach in its own way. It was "school on TV", as Henri Dieuzede pointed out. School was conducted before the eye of a camera, or before a microphone in the case of radio. Consequently the instrument was robbed of all its intrinsic capacity. No effort was made to adapt teaching methods or to use the instrument imaginatively. School still had the first and last word. This excess of mistrust on the part of the school was countered by another equally pernicious attitude, namely what we might call an excess of optimism: the media were expected to do everything, both what schools could not do and what they no longer wished to do. Television or radio was there to attenuate the inadequacies of the school, make up for its shortcomings or its failings. In such cases, it was no longer school on television, it was television acting as school and taking its place.

In both cases, relations between television and school reached deadlock. In the first case, the uselessness of television was patently obvious: it added nothing to what the school was capable of providing by itself. In this respect, it could even be said that it did not bear comparison: a televised lesson can never be as rich or as pedagogically successful as a lesson given by a teacher who is well acquainted with his class, knows how to take it, etc. In the other case, excessive expectations which could never be fulfilled only served to broaden the disillusionment brought about by so instrumental a use of this "magic box", as many perceived television to be.

b. Reasons for the change

The reasons why things appear to have changed are, firstly, the technological shock which began in 1979-80 and, secondly, the fact that both sides have become more modest.

As we have seen, the progress of the media today is marked by three phenomena: firstly, the fact that, since 1980, the rate of media growth has reached an all-time high; secondly, communications' headlong rush towards the infinitely small and the infinitely large; thirdly, substantial progress in individual and selective access to all sorts of information or all sorts of communications.

At the same time, gone are the days when television was spoken of as all-powerful and the source of all prestige, when it was expected to do everything, to play the school's role and take its place. School for its part has also acknowledged that it is not the only factor in children's education and upbringing.

The real question today is no longer whether school or media will finally win out in the struggle for the monopoly transmission of knowledge, but rather where the true role of each of these two institutions lies. On what is the true legitimacy of each of these institutions based? Whence does each derive its authority? The true question is neither what television does to children, nor whether television will take over from the school; it is how the various media can perform in conjunction with the school the tasks over which the school long believed it had a monopoly. At the same time, we must ask ourselves how the school can direct what it does best towards scattered audiences, the very ones addressed by the media and which do not necessarily have anything to do with the school as an institution.

C. Information games and what is at stake

a. Information is not the key to democracy

For the media to play an effective educational role in co-operation with the school, they must enjoy a degree of credence in the eyes of public opinion. This credence is somewhat undermined by a number of clichés which, in the final analysis, always serve other interests than information and knowledge. These are the same clichés or the same dominant representations which are used to justify, today as in the past, the right of certain people to tell the media what they must do and journalists what they must say, so that media and journalists may enjoy the only freedom they deserve and individual readers or viewers can receive the gospel, that of the state.

The first of these clichés, which cannot fail to institute precisely what it claims to remove, is the idea that information is the key to democracy and that one and the other necessarily progress or regress together. Thus, the information organs, invested with the role of a "fourth power", are alleged to be the best allies of democracy and participation by the citizens in the management of matters which concern them. Since 1945, teachers and journalists, politicians and ordinary citizens have been tirelessly repeating on both sides of the Atlantic, at the United Nations or at UNESCO, that, on the day when the citizens finally have access to "full and objective" information, democracy cannot fail to triumph. This idea has particularly caught on, since it lends itself to every imaginable embellishment: thus, from an equivalence between information and democracy, it is easy to derive the assimilation of knowledge to power.

It is doubtless true that the citizens will exercise their responsibilities happily provided they are kept informed in as valid as possible way of matters pertaining to the common interest. It is equally true, however, that by disseminating news and passing on their assessment of it, the media nurture the citizens' judgment and influence their opinions and behaviour with regard to everyone's concerns. Finally, no one can deny that information today is more plentiful and perhaps also more comprehensive and that it circulates better, more quickly and in larger quantities, than in the past: its network is in the course of becoming planetwide with intercontinental routes, transnational axes and local links.

However, the seemingly irrefutable evidence comes up against other truths, already mentioned above, the very obviousness of which perhaps serves them ill: information is only of value to an individual if he has learned to use it. It has no significance except in relation to the person who propagates it. And it constitutes power only for one who, having understood or interpreted it, has the means to take advantage of it to administrate things differently. "People watch on television and read in the papers what they have learned to appreciate and understand elsewhere, by other means at some time in the past".

b. Communication machines are not a panacea

Another piece of conventional wisdom which has come under fire recently is the importance attached in our technology-mad societies to the mirages and multiple ambiguities of what is customarily called the reign of communications. Local radios, cable and satellite television, video cassettes or video disks and domestic information services - the advent of new media to join the old ones which are still operative nurtures the most extravagant hopes among engineers and sociologists or philosophers, equally converted to divination. Both groups see the wonders of technology as heralding universal communication, the day when anyone can finally have access to anyone else or to anything anytime from anywhere and in any imaginable way: brotherhood through electronics, the reconciliation of mankind thanks to communicating machines. They envisage the providential liberation of the television viewer thanks to cassettes, cables and "interactivity".

By their extravagances, those who dream of the global village are accessories to the idea that, thanks to the feats of interactivity, the media will do for the better tomorrow what their precursors, which still operate on a one-way basis, long did for the worse. It is difficult to put forward even the slightest objection to this idea, which is very widespread. The one possible objection is altogether too obvious. However powerful the new media are, whether or not they are capable of setting up two-way communications with images rather than just with speech as in the past, what can they really do to counteract the decline of solidarity and certain forms of social interaction? As technologies, why should they necessarily participate in the reconstitution of a social fabric torn apart by interest-group egoisms or ideological conflicts?

Undoubtedly, images will circulate on a two-way basis tomorrow as words and printed matter do today. But the professional optimists confuse community and communication. What they forget or affect to forget is that communication is the expression of a will, of a will to be or live together, which almost invariably pre-exists it. In one sense, it is the community which precedes communication and not the reverse, even if communication may eventually reinforce the community. What good is a telephone without an address book? What good are "communication" machines, if, before they use them, men have not been taught to live together, to speak to one another, to listen to one another and always to respect others without ever ceasing to combat what they believe to be their errors?

D. The school challenged by the telematics society

a. The role of telematic distributing service

Microvectors and megavectors, that is microsystems for individual production and distribution and the megasystem based on satellites, alter the media to the point where the question of their relationship with school can no longer be formulated in the old terms of school television. Unlike school television, the satellite, although it broadcasts direct, would not aim at the user per se but institutional groups, not only school-based, but also in the field of continuous education (local or company centres, etc). Used in this way, a satellite channel can transfer day and night a quantity of messages so great that, to begin with, it would probably exceed the amount of teaching material produced. Advantage could be taken of stocks of films, or rather sequences, borrowed from the "répertoire internationale du documentaire et de la fiction" (international documentary and fiction inventory), which we imagine would provide cultural support. Only afterwards would the satellite distribute educational products.

Those who have clearly understood that the satellite is being considered here purely as a distributing service, that it is by no means a pedagogical institution but a tool which can be used for exchanges between teachers, users and production institutions, will understand equally clearly that the project's main aim is to give initiative and autonomy back to local groups by virtue of the added support the satellite will provide and, in a more general way, through expected developments in telematics.

It is here that the school may feel threatened: from all points on the political spectrum, a single objective is being proclaimed: an increase in the number of people holding a baccalauréat and promotion of a form of teaching matching the demands of continuous training, at once personalised and on a massive scale. It is fairly safe to assume that the education system as it is now will have difficulty in providing a suitable response. Creation of posts and construction of establishments is not enough to solve the dual problem of developing initial and in-service training.

New technologies do indeed allow another approach. It is symptomatic, for example, that in the face of highly diverse requirements and the scattered nature of target audiences, more and more training agents are thinking about remote teaching. In France, out of 76 universities, 21 have remote teaching systems for a total of over 25,000 students (ie the equivalent of a large university). The University of Provence, for instance, offers its home students a DEUG SSM (Diplôme d'Etudes Universitaire Général Sciences des Structures et de la Matière - general university diploma in structures and material sciences). In spite of the material difficulties which sometimes arise (performance of experiments at home, for example), this type of activity is proving a great success, especially as electronic distribution also provides a means of helping students in difficulties.

After trying out telephone consultation services, in 1983, the teaching team envisaged setting up a videotex service to solve a number of problems inherent in long-distance teaching, particularly the need for personalised assistance.

A further example of the success of these new types of "media-academia link-up", the telematics service installed at the Centre Universitaire Sud de Calcul de Montpellier (CNUSC) comprises a distributing service, a physics and chemistry dictionary accessible by multi-criterion sorting, revision multiple choice questions and correct answers to problems. This service is managed from Marseille, but may be operated from any terminal linked to a telephone. Anyone willing to pay the communications costs could manage it from Colombia (demonstrations were given there in 1985). A major computer centre such as the CNUSC has the advantage of being rarely out of commission and operating round the clock 365 days a year, a veritable godsend for working students who often have to study very late at night, and a service with which university computer centres without telematics cannot hope to compete.

It is obviously in the telematic distributing service that student-teacher - and student-student - interactivity takes place. Each student has an electronic mail box in the department's distributing system and can put questions to the teachers in charge of the course when he so wishes. He can also communicate with fellow students by means of the students' directory. Students sometimes discover in this way that they have neighbours following the same course. Self-assessment by multiple choice questions on minitel meets a real self-evaluation need and provides a way of supplementing training given.

There is obvious interest both in France and abroad in this remote teaching of experimental sciences and the telematics service, of which the University of Provence has so far been the sole pioneer. These two experiments will, in all probability, be followed by others. Their interest is plain: through remote teaching, it is already possible to provide those who wish to retrain in a given sector (preparation for a competitive examination for example) without taking a university degree with course modules which they can attend as external students. However, the timing of these courses depends on the university's timetable. For obvious reasons of infrastructure and organisation, it is not feasible to offer training or even planning à la carte. Nevertheless, this is the direction in which the Ministry has been guiding continuous training through the "Appel de projets Système de formation multi-média individualisés" (call for personalised individualised multi-media training system projects).

The idea is to promote a flexible training system by breaking down the constraints of the traditional system and introducing individual access, self-training equipment using all the resources of technology, local or remote assistance, participants' meetings and validation of knowledge acquired. Moreover, these "pedagogical products" will lend themselves to study within the framework of a training "market", industrialisation and even export.

If we compare these aims with remote teaching as practised abroad and with the experiment of the University of Provence, we cannot but be struck by the convergence of the objectives pursued; their relevance today is further borne out by the recent creation of the MULTIMEDIA Foundation.

We may also wonder whether, for France, university-level remote teaching could not also be a solution for a wider public than the strictly university-based audience, for example those undergoing continuous training at university level.

Teaching modules made up of written course material, exercise diskettes for use on a micro-processor and packages containing practical exercises and audiovisual documents are solutions which are bound to catch on sooner or later.

The opportunity to study at home under the guidance of high-quality teachers and to attend the university or meeting centres for periods of time to exchange experiences and learn how to work in a team is a profitable solution for everyone.

The development of communication techniques enables us to imagine a way of monitoring remote work, provided that each student is equipped with a micro-computer linked up to a minitel.

In huge sectors, the transmission of knowledge can and does take place via all the new media referred to above. Communication is no longer the preserve of a privileged few: by proliferating, diversifying themselves and making the most of the technological revolutions triggered by informatics, the media have made possible something that, only thirty years ago, would have seemed fantastic: individual and selective access to knowledge. With the new media, everyone can select his own learning pace and what he wishes to learn; no-one can lay down for him ex cathedra what he has to know. Thus

it is clear that there is no longer room for any sort of feeling of rivalry between the media (with television in the vanguard) and school: today, knowledge cannot fail to benefit from co-operation between the two, and technical progress has by itself succeeded in making obsolete the old contrast between "traditional knowledge" and "knowledge associated with real life". Never again will the relationship between the school and the media revert to the type of misunderstanding which gave us "school television".

IV. CONCLUSION

Each of the ills of knowledge observed today seems to be matched by an appropriate remedy: the remedy for the massive backlog may be a form of basic education multiplied by the most powerful vectors of Hertzian broadcasting and - why not? - satellites; at the other extreme, at the very peak of knowledge, where individual memories fall short, the answer may be databanks (both the mental power of a battery of calculating machines and the global ubiquity of teleinformatics). Between these extremes, satellites can also convey a whole range of channels suited to all levels of education in the light of local needs, low population density and shortages of teaching staff.

The real question today is therefore how we can develop these media-school relations.

If we acknowledge the difficulty of gaining access to audiovisual production, at least that which seems to be the indispensable accompaniment to textual documentation, we shall come to the conclusion that the only possible future lies in the stocking and supply of increasingly relevant and carefully chosen audiovisual products. These messages will no longer be broadcasts of films but documentary elements to be inserted into a local educational context. The contents we hope to see are, as we know, very much bound up with the data carriers, that is to say methods of storage, the present prototypes of which are the video recorder and audiovisual disks.

A particular type of author-producer will have to be mobilised, one who combines the dual vocation of teacher and a creator of images, a dual vocation which is favoured by neither of the institutions (university or television) nor by any market, with the exception of a few rare publishing and broadcasting companies bold enough to see it as a still fragile chance for development in the more distant future.

The essential point remains: what is this debate, which pits the civilisation of the written word against the civilisation of the image, all about? Firstly, it provides a preliminary definition of the mode of culture and secondly, it entails a pedagogical debate on the image as a vehicle for information.

To stick to the prosaic, namely the second point, it could be observed that the image has always been just as much part of human culture as language and that there is therefore nothing so contemporary about it. As regards its effectiveness in conveying contents, I shall not launch into any sophisticated arguments here. I hope I am not straying too far from common sense in suggesting that the image is better suited to descriptive disciplines, just as sound has proved helpful in the learning of languages. However, as we approach the realms of thought or abstraction (whether in connection with the exact sciences, legal or philosophical concepts, etc), it is necessary to discard representations. We thus dispense with a spurious in-depth debate on the image and move on to discuss audiovisual systems.

Marshall McLuhan was bold enough to say that when the child left its televison screen to go to school, it could only regress. This assertion is indignantly rebutted by many teachers, who hold up the school as an antidote to television, which they see as incapable of creating order in the mind and as a perpetrator of the notorious "mosaic culture" as defined by Abraham Moles. It is possible to point out ways of differentiating this flow of images and rearranging it into more coherent units; however, there may still be unusable or even undesirable programmes. At this point, I feel bound to express my view about the essential role of the school. As I see it, it is not so much a question of leaving it to the school to put ideas back into order as of entrusting it with the infinitely more difficult and important task of **commenting on values**.

Many children experience another formative environment and freer supplementary activities outside school, less restricted by the administration of learning and based on a much wider range of inspirations and inclinations. We cannot expect the school to do everything, nor should we stake everything on learning.

Informatics allows us to envisage a multiplicity of sources of culture and education.

Thus, even for someone who has no knowledge of computers, all that is needed to use the computer as a machine for processing information - that is storing, listing and connecting contents - is an understanding of the directions for use of a programme; the effect of informatics on teaching is therefore crucial and looks very much like the automation of an industry. We can foresee a probable revolution which will affect intellectual work as profoundly as the Industrial Revolution changed the physical dimensions of human labour. We shall then observe a total upheaval in the functions of knowledge upstream of the contents of our learning. Teaching is bound to be transformed as a result, in three different respects: in its curricula, its methods and its aims.

Even more than has been the case with the mass media - whose influence on teaching has been marginal - the influence of informatics may well go right to the heart of education. In the face of the threats of proliferating media and changes in access to information and knowledge - made possible by computer technology -, our advice is to attack rather than retreat. To fight evil with evil, and with its own weapons. This amounts to asking teachers not only to catch up with the enemy but to beat him on his own ground!